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Leopold Center for Sustainable Agriculture

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Winter 2010

## Leopold Letter Winter 2010

Leopold Center for Sustainable Agriculture

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## Organic conference marks more than decade of research, bright future ahead

Organic practices may be agriculture's best bet in coping with the many challenges it faces, from world hunger to depletion of fossil fuels and climate change. This was the conclusion offered by keynote speaker and organic farmer Bob Quinn, who shared in the optimism surrounding the 10th anniversary of the Iowa Organic Conference.

"The future increasingly must be organic in this era of limited oil stocks and the inevitable rise in petroleum-based agri-input costs," Quinn told an audience of more than 220 farmers, industry reps, Extension staff, researchers and students who attended the November 22 event in Ames. Organic agriculture does not use synthetic inputs, yet yields can be similar to those in conventional agriculture.

Quinn, who also has a Ph.D. in plant biochemistry, has organic certification for 4,000 acres of his family farm in Big Sandy,

Montana. He encourages on-farm biodiversity that spreads risk and provides ecological services such as soil fertility through longer crop rotations and legume cover crops that fix atmospheric nitrogen. Among his farm's other innovations, he powers much of his equipment using vegetable oil grown and refined at the farm. The USDA's Sustainable Agriculture Research and Education (SARE) program also has recognized Quinn for his work.

Similar optimism about the future of organic agriculture was expressed by John Jemison, soil and water quality extension specialist at the University of Maine who spoke at the conference.

"Organic agriculture is where the life of agriculture is right now," he said, pointing to growth of farmers markets and interest in local food.

**CONFERENCE** (cont. on page 7)

## Audubon couple to receive 2010 Spencer Award

By AMY THOMPSON, *Communications intern*

Vic and Cindy Madsen had been farming conventionally since the 1960s, but switched to organic production in 1999. When they learned that they would be the 2010 recipients of the Spencer Award for Sustainable Agriculture, they were pleasantly surprised but somewhat embarrassed. They are friends with many of the previous winners, who have been mentors in their ongoing journey toward sustainable agriculture.

"It's extremely humbling to win an award that your teachers have won," said Vic Madsen.

The Spencer Award was created in 2002

to honor farmers, educators and researchers who have made a significant contribution toward the stability of mainstream family farms in the state. Family and friends who nominated the Madsens agreed that they easily met the criteria.

"This couple from Audubon have been longtime contributors, supporters and promoters of family farmers," said Luke Gran with the Practical Farmers of Iowa who nominated the pair. "Their diversified

**AWARD** (cont. on page 4)

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LEOPOLD CENTER

#### LEOPOLD LETTER MISSION

The mission of the *Leopold Letter* is to inform diverse audiences about Leopold Center programs and activities; to encourage increased interest in and use of sustainable farming practices and market opportunities for sustainable products; and to stimulate public discussion about sustainable agriculture in Iowa and the nation.

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The Leopold Center for Sustainable Agriculture seeks to identify and reduce adverse socioeconomic and environmental impacts of farming practices, develop profitable farming systems that conserve natural resources, and create educational programs with the ISU Extension Service. It was founded by the 1987 Iowa Groundwater Protection Act. The *Leopold Letter* is available free from the Leopold Center at 209 Curtiss Hall, Iowa State University, Ames, Iowa 50011-1050; (515) 294-3711.



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# Research Results

On the Web: [www.leopold.iastate.edu/research/topics.html](http://www.leopold.iastate.edu/research/topics.html)

## Summaries

Easy-to-read summaries are available for these recently completed projects funded by Leopold Center competitive grants.

- Establishing an Iowa microenterprise foundation
- Latino farmers and local multicultural food and marketing systems
- Adding a new generation to Iowa's sustainable farms
- Iowa recreational property ownership: Identification, contact and social dynamics of multiple-use perennial landcover
- Sustainable economic development through organic and grazing dairy farm establishment and transition
- On-line learning: Using webinars to teach about succession and enterprise development issues

## Scientific Journals

Leopold Center-supported projects have resulted in these papers, recently published in peer-reviewed journals. Check at a research library or the journal's website for abstract or full report.

- Morton, Lois Wright, Elise Regen, David Engle, James Miller and Ryan Harr (2010). Perceptions of Landowners Concerning Conservation, Grazing, Fire and Eastern Redcedar Management in Tallgrass Prairie, *Rangeland Ecology Management* 63: 645-654. URL: <http://www.bioone.org/doi/full/10.2111/REM-D-09-00041.1>

In a three-year project funded by the Leopold Center Ecology Initiative, researchers found that while landowners were very concerned about invasive species such as eastern redcedar, few used fire to control it. They also worked with private landowners and public lands to incorporate patch-burn methods to manage land for grazing and wildlife habitat.

# News & Notes

Juls Design of Ankeny, Iowa received a 2010 American Graphic Design award from Graphic Design USA for the Leopold Center's FY2009 annual report. The report featured pictures shot by former Center director Jerry DeWitt as part of his long-running second career in artistic agricultural photography. Mary Adams of the Center staff edited the publication. To view the annual report, with its Neighbors theme, go to [www.leopold.iastate.edu/pubs/annual/annual.html](http://www.leopold.iastate.edu/pubs/annual/annual.html)

...

Iowa State University Extension has hired Joe Hannan as the new horticulture field specialist to work with commercial fruit and vegetable growers in central and western Iowa. Hannan has a 2005 B.S. degree in horticulture from Iowa State University and has been working at ISU's Muscatine Island Research Farm since 2006. He also managed the ISU vineyard at the Southeast Research Farm in Crawfordsville and had been researching an imbalance in soil potassium and magnesium as part of his work on a master's

degree. He is based at the Dallas County Extension office in Adel and will co-lead the Fruit and Vegetable Working Group. The Leopold Center is supporting two new positions in ISU's College of Agriculture and Life Sciences that will work in local food systems research and education and food crop production. Interviews for the second position, a statewide specialist in vegetable and small fruit crop production, are scheduled in early 2011.

...

Leopold Center Associate Director Rich Pirog will be an ex-officio (non-voting) director of a new nonprofit organization, the Iowa Food Systems Council. The group is an outgrowth of discussions that had been taking place among a variety of stakeholders to re-establish a state food policy council as a nonprofit. Other ex-officio members are Leopold Center advisory board members Bill Ehm (of the Iowa Department of Natural Resources) and Maury Wills (of the Iowa Department of Agriculture and Land Stewardship). Details are

**NEWS** (cont. on page 4)

# Conversations

WITH INTERIM DIRECTOR LOIS WRIGHT MORTON



## The 'people factor' and making room for innovation

Whenever I use the words resilience and sustainability, I see landscapes – grasses and trees, crops and soils, rivers and creeks. However, ecological systems are not separate from human systems. People depend on ecological systems, but people's actions also affect the conditions of these ecosystems.

The complex connections and interdependencies among these systems lead to all kinds of changes and adaptations that are not predictable, not always incremental and seldom linear. Sometimes adaptations are survival responses; other times they are simply attempts at finding a better way of doing something we've been doing all along.

An adaptation can change a situation totally. When the change is novel it can lead to an entirely new set of opportunities and solutions. Sometimes change fails to solve the problem or has unintended consequences. If the error is not fatal, learning takes place and can be the source of the next innovation and new possibilities.

I like to think about adaptation in terms of innovation. In *Where Good Ideas Come From: The Natural History of Innovation*, Steven Johnson illustrates how the natural environment adapts, innovates and changes by taking available resources and reconfiguring them in ways that solve a problem and, in turn, create a cascading effect on surrounding systems.

Here's an example. The beaver cuts nearby trees and builds a dam to better protect itself against its predators, transforming a forest and stream into a wetland. The new wetland attracts pileated woodpeckers who drill nesting cavities in dead trees. Wood ducks, Canadian geese, herons and kingfishers enjoy the beaver's 'artificial' pond, along with frogs, lizards and other slow-water species such as dragon flies, mussels and aquatic beetles. The beaver is a keystone species (an organism that has a disproportionate effect on its ecosystem) and an ecosystem engineer.

Humans also are a keystone species and ecosystem engineers. Cultivated agricultural ecosystems testify to the disproportionate effects that human adaptive management and

engineering have on other social and ecological systems. Science-based knowledge is an important cornerstone that can guide our actions, but we also must take risks and experiment with new ideas if we want to solve problems and build agricultural sustainability and ecosystem resilience.

Johnson talks about innovation in this

**Sometimes adaptations are survival responses; other times they are simply attempts at finding a better way of doing something we've been doing all along.**

context:

"...good ideas are not conjured out of thin air. They are built out of a collection of existing parts, the composition of which expands (and occasionally, contracts) over time. Some of those parts are conceptual: ways of solving problems or new definitions of what constitutes a problem in the first place. Some of them are, literally, mechanical parts."

Building resilience in ecosystems, improving agricultural sustainability and creating systems that provide healthful, plentiful and affordable food requires many people at the table. Innovation needs a densely populated network and one that is "plastic," that is, a network flexible enough to try new configurations. Networks that do not change cannot form new patterns, and thus are not capable of exploring the edges of new possibilities.

For those of us in the sustainable agriculture community, this means we must engage in conversations and actions that link the entire continuum of agricultural systems and

perspectives. I am talking about everything from conventional animal and cropping systems to biological farming to organic agriculture, and all the systems in between. We must find ways to build fluid networks that generate, share and store information and ideas. Otherwise, we risk being trapped, stuck in our own biases and agendas.

Johnson writes that some environments squelch new ideas while other environments seem to generate new ideas with very little effort. Martin Ruef, a Stanford Business School professor, reports finding that diverse, horizontal social networks were three times more innovative than uniform, vertical networks. Further, he suggests that groups united by shared values and long-term familiarity often led to conformity, which can dampen potential creative sparks. Connecting different perspectives, even clashing perspective, triggered new ways of thinking about problems and promoted the discovery of new possibilities and solutions.

The Leopold Center is committed to creating spaces for innovation. Many of our partnerships now serve as catalysts of cooperation and magnets for new ideas and strategies for solving problems. Our goal is to continue encouraging dialogues among people with diverse practices and fields of expertise who have a vision of a more sustainable agriculture.

The challenge is immense. We believe there are a lot of great ideas waiting to collide, cross-pollinate, and reinvent themselves. Ideas generated from our diverse networks can change how we think and act as we work to build landscape resilience and greater agricultural sustainability.

Brian Walker and David Salt. 2006. *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*. Island Press, Washington.

Steven Johnson. 2010. *Where Good Ideas Come From: The Natural History of Innovation*. Riverhead Books, NY.



## AUDUBON COUPLE TO RECEIVE 2010 SPENCER AWARD

**AWARD** (continued from page 1)

family farm operation is a model for what is possible to achieve for many families across Iowa."

The Madsens farm on 280 acres near Audubon. Their farm is a mixed crop and livestock operation with hogs, cattle and broiler chickens. Cindy sells most of the chickens directly to her customers at farmers markets and via e-mail orders. Some of the hogs and cattle are direct-marketed as well. Most of their operation is organic, except for a portion of land that is quite steep and unmanageable for tillage.

"We feel that organic is better for us and the land," Vic says. "It is a more personal way of farming."

The Madsen's acknowledge that not farming the conventional way was far more work than they had anticipated. Everything that had been taken care of by synthetic nitrogen and chemicals, such as weed control and fertilization, was replaced with their management and machinery. They transitioned to organic gradually, taking small steps each year.

"A huge struggle is weed control, so when I get a reasonably clean field, it is a big satisfaction," said Vic.

The Madsens became interested in organic practices through friends, and an opportunity to work with the late Fred Blackmer, an Iowa State agronomist known for his work with the Leopold Center on the late-spring nitrogen soil test. The Madsen's farm was part of the trials to develop the

soil test and check soil fertility levels for certain crops. During those trials Vic learned that fertilizer companies were selling products that could lead to nitrogen overload. The random replicated trials gave him the confidence to become certified organic, which relies on cover crops and manure rather than synthetic fertilizer inputs.

The Madsen's farm was among Iowa's first to be accepted in the Conservation Security Program (CSP) in 2002 at the Tier 3 highest level, with payments based on conservation practices rather than agronomic production. They are active members of Practical Farmers of Iowa, often sharing their expertise in direct-marketing for meat.

"We wouldn't have been able to make the



*Vic and Cindy Madsen operate a diversified organic grain, hay and livestock farm in Audubon County. They will be the ninth recipients of the Spencer Award for Sustainable Agriculture. (Photo courtesy of Practical Farmers of Iowa.)*

 [www.leopold.iastate.edu](http://www.leopold.iastate.edu)

**For more information on the Spencer Award:**  
[www.leopold.iastate.edu/resources/spencer/spencer.htm/](http://www.leopold.iastate.edu/resources/spencer/spencer.htm/)

changes without the networking of PFI and the work of the Leopold Center," Madsen said. "They have been good resources and invaluable to us."

As with many older-generation farmers, he views sustainability as a "must-have." A lot of that has to do with traditions.

"We need to leave the soil in good shape, so our grandchildren will have good soil to farm with," he said.

Madsen agreed that sustainability is a "dynamite-packed word." The definition of sustainability is different to everyone, he said, and often is over-used. His definition includes improvement of the soil to hold water and organic matter.

When asked where he sees his farm in 10 years, Vic replied, "I would like to add more infrastructure, meaning more fencing, add different grazing pastures, and more storage for crops, meaning small grain bins."

He added that he wouldn't be opposed to growing different organic crops.

The Spencer Award includes a \$1,000 stipend and is one of Iowa's largest awards in sustainable agriculture.

## NEWS & NOTES

**NEWS** (continued from page 2)

available on the group's website, [www.iowafoodsystemscouncil.org](http://www.iowafoodsystemscouncil.org)

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A directory of sources for cover crop seed, equipment and businesses that offer aerial application in Iowa has been updated by Practical Farmers of Iowa. The Cover Crop Business Directory was compiled by Sarah Carlson and Tomoko Ogawa for the Iowa Cover Crop Working Group, which is supported by the Leopold Center Ecology Initiative. A link to the directory appears on the Leopold Center cover crop resource page at: [www.leopold.iastate.edu/research/eco\\_files/cover\\_crops.htm](http://www.leopold.iastate.edu/research/eco_files/cover_crops.htm)

...

## Iowa Local Food and Farm Plan update

The Leopold Center is putting the final touches on a new Iowa Local Food and Farm Plan, requested by the Iowa legislature to create a more robust local and regional food and farm economy in the state.

The Center worked with partners to host 15 listening sessions between June and September to gather ideas for recommendations that should be included in the plan. The Center also analyzed results of more than 500 surveys that were returned about the plan. In total, the plan will have input from more than 1,000

Iowans from 95 of the state's 99 counties, also numerous agencies and organizations.

The plan, which will include funding and policy recommendations, will be presented to legislators when they convene January 10 for the 2011 session. Recommendations in the plan also will be discussed at the quarterly meeting of the Regional Food Systems Working Group on January 20 at the Hy-Vee Conference Center in West Des Moines. Details will be posted on the Leopold Center website: [www.leopold.iastate.edu/foodandfarmplan.html](http://www.leopold.iastate.edu/foodandfarmplan.html)



TOWARD A SUSTAINABLE

Future

## The food and agriculture landscape of our future

**"We can evade reality, but we cannot evade the consequences of evading reality."  
– Philosopher Ayn Rand (quoted in Julian Cribb, *The Coming Famine*)**

Predicting future scenarios is, of course, always tricky. Both nature and human intelligence are brimming with emergent properties and therefore constant change is to be expected. Accordingly both challenges and opportunities, which we may have thought impossible just a few months ago, may now become realities.

Ecologists constantly remind us, however, that there are limits. While systems can absorb shocks and disturbances and have the capacity to recover and adapt, they also can cross thresholds to very different kinds of functioning that can present us with irreversible circumstances. At the same time, preparing for possible future changes always is wise.

A recent book by science writer Julian Cribb, *The Coming Famine: The Global Food Crisis and What We Can Do To Avoid It*, anticipates a rather daunting list of challenges that could cause our current food system to cross some forbidding thresholds. On his list are land scarcity, depletion of fertilizer stocks and fresh water resources, the end of cheap energy, increasing human population and consumer demand, climate change, the collapse of ocean fish catch, the underfunding of agricultural research, and geopolitical tensions arising from many of the dwindling resources. I think we also should add to his list the depletion of soils and soil health, as well as a dwindling population of farmers.

As Cribb suggests, many of these challenges can be averted if we invest in changes that could redesign our food and agriculture system. That will require, among other things, commissioning significant agricultural research. It also would mean investing in research that explores alternatives to some of the practices that produced the unintended consequences that present us with some of the challenges we now face.

Probably our biggest challenge is that most of us don't care to think about any of this, let alone commit to doing anything about it. Not surprisingly, most of us prefer to keep doing what we already have invested in, what has been successful in the past and what we know best, rather than exploring something unfamiliar. But, as Ayn Rand put it, while "we can evade reality we cannot evade the consequences of evading reality."

A good example of the potential consequences of evading reality, as well as the uncertainty surrounding that reality, is our energy future. The uncertainty surrounding this issue is highlighted in an article published in the *New York Times* on November 16, 2010. That author suggested that peak oil prophets-of-doom apparently had it wrong. Given the dramatic new quantities of oil and natural gas extracted through deep-water drilling, fracturing and other new technologies, we likely now will have adequate fossil fuels for

the next 100 years, despite the dramatic increase in demand. In the article, Edward Morse of Credit Suisse notes that this new situation gets us to "something that very closely approximates energy independence."

Clifford Krauss, who wrote the article, fails to mention the fact that our country's first oil well started producing in 1859 in Pennsylvania, just 150 years ago. Consequently, even if we accept his optimistic assessment that we now may have another 100 years of energy supplies, it is still an extremely short span of time (250 years) in the history of human food production.

Moreover, nowhere does Krauss contemplate what we will do to produce our food 100 years from now. Since our modern food system is very dependent on fossil fuels, how will we produce our food once fossil fuels no longer are available? A hundred years (let alone 40 or 50, which may be more likely) is not a long period to redesign a system as important as food. If we decide now that we no longer need to worry about a post-fossil-fuel era, will we do the research necessary to create a new food system for the future?

Another issue that Krauss fails to address is what another 100 years of burning fossil fuels will do to the atmosphere and global climate.

Cribb suggests that we might consider reordering some of our priorities to prepare for our uncertain food future. He notes that "at the turn of the millennium, public investment by all governments worldwide in improving food production totaled just \$23 billion . . . [annually, something that] contrasts eerily with humanity's total spending of \$1.5 trillion on armaments . . ."

He proposes that if we were to invest our brain-power in addressing future challenges we might avoid a possible global famine. "... it must be said that, if water, land, nutrients, energy and stable climates are all increasingly scarce, the one thing not in short supply is brains. It is high time we used them more: now is the moment when Homo gets to earn the tag sapiens."

*Julian Cribb*

Julian Cribb, 2010. *The Coming Famine: The Global Food Crisis and What We Can Do To Avoid It*. Berkeley: University of California Press.

Clifford Krauss, 2010. "There Will be Fuel," *The New York Times*, November 16. Cribb, *Op Cit*. 116

## Project looks at organic livestock issues

Although sales of organic meat are small, this is one of the fastest growing sectors in the organic food industry and a number of Iowa producers want to respond to market demand.

However, one of the perceived challenges for organic livestock producers has been access to alternative veterinary care because antibiotics and a variety of other conventional treatments are excluded by National Organic Program (NOP) standards.

Jenny O'Neill, an Iowa State graduate student in sustainable agriculture, looked at this issue by surveying all USDA-certified organic livestock producers in Iowa and members of the Iowa Veterinary Medical Association (IVMA) who work with food animals. Her study was funded by a Leopold Center competitive grant to her advisor, Betty Wells, ISU Sociology. It also was the topic of a panel discussion during the Iowa Organic Conference in Ames on November 22.



O'Neill said she found a surprising amount of support and interest in organic livestock agriculture. She reported nearly a 70 percent response rate from veterinarians (296 of 493 IVMA members returned surveys) and a 55 percent response rate from organic producers (75 of 160 producers returned surveys).

Organic producers said they handled most routine herd health needs without veterinary consultation and indicated that herd health was not a significant challenge. The biggest reason producers cited for their self-reliance was lack of herd health problems.

On the other hand, veterinarians perceived a number of health challenges within organic systems, and stressed the

importance of veterinary involvement.

While most veterinarians expressed some reservations about organic production, the majority indicated interest in it and recognized consumer demand for organic products. Most believed information related to organic systems is difficult to access and favored increased educational options, such as continuing education credits and/or increased information within veterinary medicine programs.

"As veterinarians, we have a lot more information for farmers from a production standpoint," said Dr. Annette O'Connor, an associate professor in Veterinary Diagnostic and Production Animal Medicine at the Iowa State College of Veterinary Medicine, and a member of the panel discussion. "Organic producers probably think we're there only to help with medical issues so we do not get called in to help, that is, until health really becomes an issue."

Ron Rosmann, an organic livestock producer from Harlan and member of the panel discussion, said he manages his cattle to avoid major health problems. He said he needs to rely on various vaccinations, allowable under the National Organic Program (NOP) standards, and treatments other than antibiotics. He said that while Europe allows emergency antibiotic treatments for organic livestock under certain conditions, it is not allowable in the United States (for the animal to be marketed as organic). He added that he would like to see research on alternative treatments for common problems such as pinkeye in cattle, which would provide him with more options as an organic producer.

O'Neill also reported that the veterinarian survey showed a high degree of misunderstanding regarding the definition and rules of organic production, existence



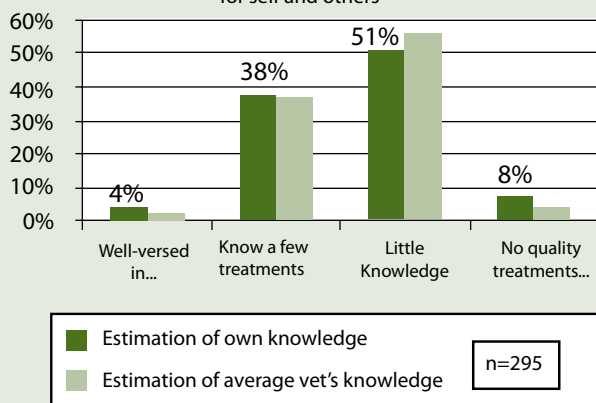
**Above:** These Jersey calves are from Kilgus Dairy in Fairbury, Illinois. Veterinarians and organic producers report that more information is available on organic dairy than organic beef and hog production.

of national organic standards, and where to access authoritative information. She said these factors indicate that information related to organic standards and options is not always making it into the hands of veterinary professionals.

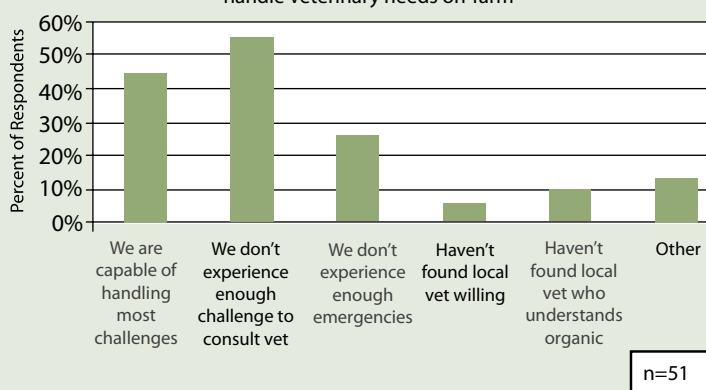
O'Connor said future veterinarians – students enrolled at Iowa State's veterinary college – are keenly interested in understanding organic production. "It's an area that often is misunderstood," she said.

A third member of the panel discussion was Dr. Wendy Fulwider, a veterinarian who specializes in animal behavior and who works with Organic Valley livestock producers. She said some issues stem from the small number of organic producers in a region, and lack of information about organic systems and the national organic standards.

**Vet survey: Levels of knowledge about organic livestock reported for self and others**



**Organic producer survey: Reasons organic livestock producers handle veterinary needs on-farm**



## CONFERENCE ALSO NOTES RESEARCH, NEEDS OF ORGANIC PRODUCERS

**CONFERENCE** (continued from page 1)

Jemison noted that organic systems have been shown to leach four to five times fewer nitrates than conventional systems, and they take advantage of solar energy. “We need to have a real connection to agriculture and see the benefits, such as removing nutrients from our water and growing our food,” he said.

The annual conference is coordinated by Kathleen Delate, ISU professor of agronomy and horticulture, who also directs ISU’s Organic Agriculture Program. The Leopold Center was a conference sponsor and has supported organic research since 1997, when Delate and Jerry DeWitt held focus groups to decide the design of the Long-Term Agroecological Research (LTAR) plots that were set up near Greenfield in 1998.

“This year was not without its challenges, for conventional farmers and organic farmers alike,” Delate said. “Even under very wet conditions for the second year in a row, our organic corn and soybean yields at the LTAR plots were equal to conventional – 147 bushels per acre for corn and 57 bushels for soybean.”

Now in its 13th year, the LTAR experiment is one of the longest running comparisons of organic and conventional crops in the country. USDA soil scientist Cynthia Cambardella said the research also has demonstrated a clear benefit from organic practices in terms of greater carbon sequestration in the organic plots to help offset harmful global CO<sub>2</sub> emissions from burning fossil fuels.

Delate has successfully leveraged Leopold Center support for related research. In 2009, the USDA awarded Delate a \$599,000 grant to study water quality and impacts of organic and conventional systems. Most recently, she received a \$691,969 grant from the USDA’s National Institute of Food and Agriculture in the Organic Transitions Program. The research project is designed to improve organic vegetable farming practices with regard to pest management, crop quality, profitability and soil quality.

Delate said these new opportunities reflect both a change in attitude toward organic agriculture, once considered on the fringe for lack of scientific research, and growing consumer interest in buying organically grown food. The 2008 Farm Bill provides about \$20 million for organic research annually, compared to past levels of about \$3 million.

**Below:** These are the Long-Term Agroecological Research (LTAR) plots at Iowa State’s Neely-Kinyon Farm near Greenfield, some of the longest running comparisons of organic and conventional crops in the country.



### Leopold Center-supported research

Less than 10 percent of Leopold Center research dollars goes to studying organic systems. However, through the years the Center has been able to significantly add to the body of knowledge regarding organic agriculture.

See a list of current and recent research projects on this topic on our website: [www.leopold.iastate.edu/pubs/nwl/2010/2010-4-leoletter/organic.html](http://www.leopold.iastate.edu/pubs/nwl/2010/2010-4-leoletter/organic.html)

### Common questions

Why would the Leopold Center invest in organic systems research? We can learn a lot about how to implement Aldo Leopold’s idea of the ‘biotic community’ from organic agriculture, which takes a system-wide approach. Consumer demand for healthier food and cleaner environments provide a compelling reason to look at alternative systems and their impacts.

Organic systems research also adds to our scientific knowledge regarding ecological theory and can be transferred to non-organic farming systems, thus strengthening all aspects of agriculture. For example, organic farming fosters biodiversity, which offers unique services such as pest management in the ecosystem. How biodiversity affects pest management on farms is not fully understood and can be tested in organic systems.

More questions and answers in our online newsletter edition.

The USDA reported 518 organic farmers in Iowa in 2008, and the Iowa Department of Agriculture and Land Stewardship reports 106,000 acres of certified organic land. There continues to be consumer demand for organic products, even during the recession, with growth in organic food sales projected at 5 to 7 percent this year, according to the Organic Trade Association.

Ron Rosmann operates a livestock-grain organic farm near Harlan in west central Iowa. He agreed that more research is critical for most organic farmers to remain competitive.

“Seed genetics seem to loom very large for me,” he said. “We do not have as many choices for organic seed and most if not all of the private companies cannot afford or easily obtain access to the best genetics out there. Conventional seed stock varieties without genetically modified traits are becoming increasingly more difficult to obtain.”

Northwest Iowa organic farmer Paul Mugge spoke at the conference about transitioning to organic. He said more research is needed on how to make organic systems more resistant to the effects of weather swings. Wet weather can be very difficult for organic farmers who rely on tillage for weed management. Rain also is a problem during harvest; Mugge’s farm had 11 inches of rain in July when canola fields were ready.

However, Mugge said many aspects of organic systems bode well for the future.

“Research is showing that organically managed soils are able to sequester more carbon and hold onto it for a longer period of time, which might help us down the road in mitigating climate change,” he said. “We know we can get roughly the same yields on organic as with conventional agriculture, so this would be yet another benefit.”



# Resilience and a systems approach through another lens

By JOE COLLETTI, Guest columnist



**EDITOR'S NOTE:** As part of our focus on resilience and sustainability, the Leopold Center asked Joe Colletti for comments related to his expertise in forestry, economics and agroecosystems management. He is Senior Associate Dean for the Iowa State University College of Agriculture and Life Sciences and a member of the Leopold Center's advisory board. This is excerpted from a longer article, available on our website.

Using my lens of agriculture and forest ecosystem management, I define sustainable agriculture as a concept in which an agroecosystem is productive (in terms of market and non-market goods and ecological services), diverse and resilient. To be sustainable, this system must contain measurable indicators of its economic viability, social acceptance and environmental soundness. Figure 1 is one of the most familiar illustrations of this concept, with a sustainable agroecosystem occupying the area where all three spheres overlap.

Yet, concept diagrams are a long way from the real world (see Bear Creek photo). What is missing from principle to description to reality of sustainable agriculture is a decision model – something that allows any landowner to achieve both broadly stated goals and specific, measurable and achievable objectives.

In practice, the vast majority of agroecosystem acres are privately owned. To manage across modest to large watersheds and across ecosystem scales increases the social, economic, political and ecological complexities, perhaps exponentially. Decision-makers need many more skills, abilities and knowledge than in the past, so a decision model must incorporate:

- multiple goals and objectives of a typical Iowa or Minnesota farm,
- resilience thinking of ecological processes and functions and thresholds,
- social acceptability and economic viability, and
- treating the land as a socio-economic-ecosystem.

A practical decision model would have various guiding principles and a production function or functions(s) that can estimate output and inputs, various resource, market and policy constraints, and known and unknown risks and uncertainties. If all of these elements come together then there should exist a farm - an agroecosystem - that is productive, diverse and resilient. Yet, my experience and training lead me to believe that most decision-makers will seek simplifications of these complexities in making their decisions.

Can we design a robust and practical decision model? Ideally, it would provide the user a process for thinking and doing that is linked to the principles and a framework for sustainable agriculture and resilience.

**"...agroecosystem management and the concept of sustainable agriculture are not rocket science - they are much more complicated than rocket science!"**

Uniquely, such a model would have non-linear steps (allowing the user to "jump back" and re-evaluate management options when risk/uncertainty/change intervenes with the original plan). It also would be based on guiding principles necessary for the long-term management of our agroecosystems. A useful starting point might be the guiding principles identified by Salwasser and Pfister (1994) when they struggled with the USDA's "new forestry" (see sidebar).

Salwasser and Pfister's eight guiding principles help articulate desired future conditions, structure trade-offs and other analyses needed to determine feasible management actions, and identify the economic, social and ecological indicators to assess and evaluate attainment of goals and objectives under conditions of risk and uncertainty. I believe a decision model based on these guiding principles can be applied to whatever agroecosystem is being managed by any landowner in the agroecosystem.

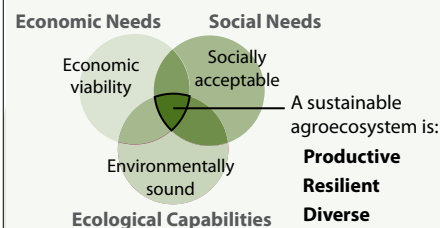
In summary, agroecosystem management and the concept of sustainable agriculture are not rocket science – they are much more complicated than rocket science! The beauty of the concept and the decision-making model are that they cause the decision-maker to "think like a mountain" (to borrow a Native American saying) and focus on people and the environment.



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Read more about using forest ecosystem concepts for agroecosystem management:  
[www.leopold.iastate.edu/pubs/nwl/2010/2010-4-leoletter/colletti.html](http://www.leopold.iastate.edu/pubs/nwl/2010/2010-4-leoletter/colletti.html)

## Agroecosystem Management & Sustainability



Bear Creek National Demonstration Watershed.

## Guiding principles for forest ecosystem management

1. Work within the scope of natural processes that shape landscape and ecosystem conditions.
2. Focus on end results – desired future ecological and social conditions.
3. Coordinate strategies for conservation of shared resources.
4. Get people involved.
5. Integrate information and technology.
6. Integrate management and research.
7. Revitalize conservation education and interpretation.
8. Develop, monitor and evaluate vital signs of ecosystem health.

Source: Salwasser, H. and R.D. Pfister. 1994. Ecosystem Management: from Theory to Practice. In: Sustainable Systems: Implementing an Ecological Approach to Land Management. USDA Forest Service General Technical Report RM-247.

# Looking at resilience from the farm level

By JOHN GILBERT, Guest columnist

EDITOR'S NOTE: In our ongoing discussion about resilience, the Leopold Center asked Practical Farmers of Iowa for a snapshot view at the farm level. PFI member John Gilbert, who is part of a three-generation farm in Hardin County, provided these comments.

At Gibraltar Farms, resiliency is an objective, strategy, mindset and part of our farm's effort to be sustainable. The problem is that you cannot tell if a farm is resilient until after something happens. Being resilient is part preparation, part biology, part economic, part psychological and part luck.

Beverly and I farm with my brother Greg and his wife Barb and our father William. In a major development for the farm, our son John and his wife Sarah joined our operation in April (a neighbor, Wendell Bahr, also works with us). Gibraltar Farms includes just over 800 deeded acres between Iowa Falls and Hubbard in north central Iowa. Our centerpiece is a 90-head Brown Swiss herd; we milk 35 to 40 cows year-round and sell milk to Swiss Valley Farms dairy cooperative.

We also pasture-farrow spring and fall, raising 250 to 300 pigs without antibiotics for sale to Niman Ranch and through a local locker. About 650 acres are classified as tillable. The land my son and I farm mainly feeds the livestock and includes corn, food-grade soybeans, alfalfa-grass hay, oats and a variety of annuals for forage. Areas most prone to flooding and erosion have been converted to rotationally grazed pastures.

The farm features about one mile of Southfork, a tributary of the Iowa River, also free-flowing wells, two fens and an undeveloped marsh with prairie wildflowers. The farm is home to deer, raccoons, possum, groundhogs, fox, coyote, red-tail hawks, herons, bald eagles (in winter), turkey vultures, great horned owls, wild turkeys, snapping and box turtles, leopard frogs and a variety of song birds. More than a mile of grass headlands, 13 terraces, and extensive grass waterways and stream buffers combine with ridge planting and minimum-till systems to protect the soil and water.

Strategies that promote resiliency include working with nature to time when calves and pigs are born; selecting livestock and

crop varieties that are hardy with minimal inputs; choosing breeding stock with calm dispositions for easier handling; relying first on on-farm resources and skills; being financially cautious, using proper accounting procedures and managing risks with insurance whenever possible.

Our farm is very traditional in its structure. We try to be sensitive to what consumers want and are open to opportunities that offer premium prices. When we try something new, we do it on a small scale so the mistakes also are small.

and escalating input costs. Keeping debt levels manageable and having cows that can turn less-than-ideal crops into high value milk helps our farm weather adversity.

Diversity in seeds and breeds is a priority for our family, which is why I participate with Practical Farmers of Iowa in a trial to test and increase the varieties of corn seed available. I used to be able to buy a high-protein, high-yielding corn in the marketplace. That option is no longer available because genetic modification of seed has led to rapid corporate consolidation in the seed industry, and specialty seed varieties are no

longer important to the corporations.

Gibraltar Farms works to keep decision-making as local as possible, so that our family can build community and respond quickly to changing economic conditions. One example: We own our own livestock. Farmer-owned livestock is much more likely to be a positive for local economies and environments. Livestock makes more limited acreages economically viable, creates a need for soil-conserving forages, provides income and work for a family on the farm, builds stronger local communities and is the time-honored way for new generations to enter farming.

Finally, at Gibraltar Farms we hope to be more resilient

by keeping an open mind, staying inquisitive, and keeping up on trends. We are farmers who connect to communities that can inform and support us as we make changes, including Practical Farmers of Iowa.



**Above:** John Gilbert, whose family has farmed for more than a century, shares what makes their operation so resilient.

Adding another generation is a major step toward sustaining the farm. The challenges involved are a small price to pay for what adding a son and daughter-in-law means long term. The Gilbert family has farmed in Hardin County since coming from Delaware County in the 1870s. The home place is a century farm.

Challenges to the farm in recent years have come from the weather (severe flooding in 2008 and moderate flooding in 2007, 2009 and late July of 2010), hail on the south farm in August 2009 (we were lucky; the most severe storm in decades wiped out many of our neighbors' crops), low milk prices in 2009

## Project adds biodiversity to public lands, options for goat, cattle producers

By AMY THOMPSON, Communications intern

Loren Lown manages parks and green spaces and Bruce Carney raises cattle. Typically their paths would not cross, but at the Chichaqua Bottoms Greenbelt near Maxwell in Polk County, they work together in a public-private partnership that uses farm animals to restore and rejuvenate prairies and oak savanna along the Skunk River.

"I just thought it was an interesting project because of the collaboration between county agencies and a local farmer. I guess I'm just trying to get along and see how we can meet each other's needs and show that grazing can be a part of conservation as well," said Carney, who owns a cow-calf operation south of Maxwell.

This multi-year project funded by a competitive grant from the Leopold Center's Ecology Initiative teams public agencies with Iowa farmers who own goat and cattle herds. The goats eat invasive plants and shrubs which cause problems on public land, while the foraging cattle provide native grass management. This allows herd owners time to interseed, stockpile forage or hay, build new fences or rest their home pastures for optimum grazing conditions.

Lown is natural resource specialist for the Polk County Conservation Board, which manages a 7,300-acre greenbelt along the Skunk River. The area has a small campground, but changes in land use and logging for railroad timber have destroyed the area's historical wetland, woodland and oak savanna habitats. Invasive species such as buckthorn, reed canary and switchgrass need to be controlled in order for other species to compete.

"Our project boils down to this question: 'Can we graze and browse cattle and goats on natural areas and restore them to a more natural state while providing quality forage for domestic animals?'" Lown explained.

The Chichaqua project involves about 460 acres that have been grazed during the past two summers. The herd of 31 goats is owned by Deb and Eric Finch of State Center; the 100 cow-calf pairs are owned by Carney and his neighbor Jeff Boyd. The goats primarily browse, which means they eat almost everything including twigs and branches, which also helps to clean up the land. The cattle graze on non-native grass species in the reconstructed prairie, which

allows other types of plant growth and forage production.

"By bringing them [the goats] down here it's been a benefit. We can get them on browse and get them off of those pastures that we've had troubles with, and those pastures can sit and rest," said Deb Finch.

Goats are valuable because they eat almost every invasive plant species. So when the invasive plants are gone, native plants can flourish and complete a natural life cycle.

The project also helps farmers by giving them access to additional land that can be grazed while they grow a late-season stockpile or hay crop on their own land for winter feed. "We're losing a lot of pasture acres to corn production, so we really need to find new areas for pasture," Carney said.

Jeri Neal, who works with the Leopold Center's Ecology Initiative, said land management and access to grazing land are critical issues for both public land managers and farmers trying to integrate livestock into their operations.

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**Chichaqua project**  
**On the Ground videos:**  
[http://leopold.iastate.edu/research/eco\\_files/Chichqua.html](http://leopold.iastate.edu/research/eco_files/Chichqua.html)

"We want to create a win-win situation for all partners," she said. "This project is important to Iowans because it explores an innovative way to bring together public and private interests while providing benefits for both people and the environment."

The Leopold Center grant was awarded to Iowa Heartland Resource Conservation and Development, a locally-led nonprofit affiliated with the USDA Natural Resources Conservation Service. Other partners include Practical Farmers of Iowa, which helped with a field day in August; Iowa NRCS, for partial funding of fence materials; two Drake University scientists researching the impact on diversity; and Iowa State University Extension and NRCS specialists, for grazing and livestock management assistance.

**At right:** Eric Finch unloads his goats at the Chichaqua preserve. The herd can browse on invasive plant species, which helps land managers. The arrangement also helps producers by providing access to land.

**Below:** Norm McCoy tries to coax animals into an open area during a field day in August. McCoy, who also raises goats and lives near the preserve, helps keep track of the herd for owners.





## 2010 Pesek Colloquium connects climate change, agriculture

By LAURA MILLER, Newsletter editor

The year was 1989. A young environmental journalist, Bill McKibben, had finished his first book about climate change, a concept rarely discussed by non-scientists. Another new book published that year also would shake up the soil science world, thanks to its robust discussion of profitable farming systems that used fewer inputs.

Although worlds apart, the people behind these two books came together this year on October 14, when McKibben presented the 10th Annual Pesek Colloquium on Sustainable Agriculture at Iowa State University in Ames. The event honors Iowa State Emeritus Professor of Agronomy John Pesek, who chaired the landmark National Research Council study that published *Alternative Agriculture* in 1989.

McKibben said climate change was an appropriate topic for Iowa and the agriculture event because global warming will alter crop production systems everywhere. "Agriculture -- i.e., what's for dinner -- is the most basic human need, which is called into question by what we're doing to the planet," he said.

"The only thing we didn't know 20 years ago about climate change was how fast this was going to come about, which has been much faster than anyone predicted," McKibben told an audience of more than 700

people. "The summer of 2010 was the most brutal summer the northern hemisphere has ever known, with 19 nations setting new high temperature records. It gave us the first, real widespread taste of what climate change can bring about in its early stages -- namely, deluge, downpour and floods throughout the world."

Since writing *The End of Nature* in 1989, McKibben has authored numerous books, including his latest, *Eaarth: Making a Life on a Tough New Planet*, released in April 2010. Much of his Iowa presentation focused on efforts to organize 350.org, a global movement to increase awareness and activism about reducing carbon dioxide levels to 350 parts per million to limit affects of global warming. During a question-and-answer session he was asked how agriculture could help meet that goal.

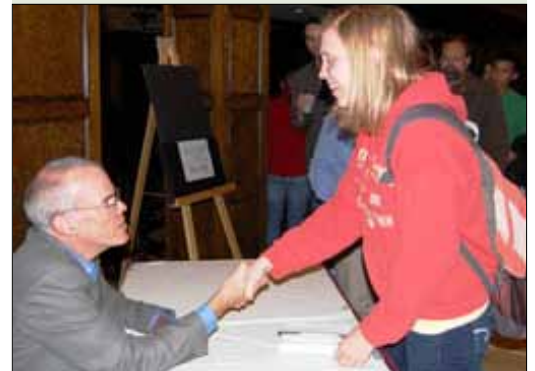
"The current row-crop system is a recipe for pouring water off fields and into creeks," he said. But Iowa could send a "profound message" around the globe by making changes in what he called a "risky system" that relies on fossil fuels.

McKibben said he favors localized food production, crop diversity, scaled-down operations where "manure is a useful thing on the farm," and

using low-input agricultural systems that concentrate on soil quality. Biofuel production could be desirable, he added, if it used feedstock such as switchgrass that is grown on marginal land and does not compete with food.

Pesek had a long and distinguished career at Iowa State, with contributions in the areas of soil fertility, crop production and the economics of soil fertilizer. The Leopold Center has been a co-sponsor of the colloquium since it was created in 2001.

**Below: Environmental journalist Bill McKibben attracted a big crowd to the annual Pesek Colloquium in October.**



## Social connections important for female land owners

Social support is key to reaching women, who own or co-own nearly half of all farmland in Iowa. Women also have strong attitudes toward conservation because of their concern for future generations, but service providers and agencies have had trouble providing them with the education and tools to more actively manage their farms.

Valuable insight comes from a recent evaluation of Women, Land and Legacy™, an outreach project that has touched the lives of an estimated, 1,500 women landowners in Iowa since it began in 2002. The evaluation of 17 locally-led programs across 28 counties was conducted by Corry Bregendahl, an assistant scientist at the Leopold Center and WLL™ state team member.

The core of WLL™ is the local planning or coordinating team. Twenty-three teams covering 37 Iowa counties work with local leaders to host listening sessions with women farmland owners about their vision and goals for the land. These listening sessions then are used to develop facilitated learning sessions on topics identified as important to the women in each county or county cluster. The local planning teams are led by local women in cooperation with "anchor partners" from the local USDA Farm Service Agency, Natural Resources Conservation Service, and ISU Extension offices.

Evaluations were conducted in 2009 using surveys returned by 300 participants and local planning team members, and telephone interviews with service providers and agency personnel.

The evaluation found monumental changes in attitude -- by the women who participated in the learning sessions as well as the local agency service providers who worked with them. Participants also reported initiating conversations with families and consulting attorneys and financial planners to establish or update estate plans, draft or revise land contracts, create trusts and prepare wills and farm plans. In the process, participants said they gained confidence about their ability to make good decisions and navigate the local social landscape to help them in these efforts.

To reach the full report, and for more information about Women, Land and Legacy™, go to the group's website at: <http://www.womenlandandlegacy.org>





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# Highlight Events

## More details, events

Check Leopold Center Web calendar:  
[www.leopold.iastate.edu/news/events.htm](http://www.leopold.iastate.edu/news/events.htm)

Learn about how to get support for events: [www.leopold.iastate.edu/news/support.html](http://www.leopold.iastate.edu/news/support.html)

### January 7-8

The 2010 Spencer Award will be presented to Vic and Cindy Madsen at Marshalltown Community College at 6:30 p.m. January 7 during the annual Practical Farmers of Iowa conference. The Leopold Center also is providing travel support for New Zealand beef producers Mike and Sharon Barton, who will speak at the conference.

### February 1

The Leopold Center will host an online webinar with four local food system consultants. Check web for details

### February 6

The 2011 Shivers Memorial Lecture will focus on climate change with a presentation by Gene Takle, "Will climate change impact the sustainability of Iowa farms?" The lecture will begin at 7 p.m. in the Sun Room of the ISU Memorial Union in Ames. The event is free and open to the public. Takle leads Iowa State University's Climate Science Initiative team that was established in response to the public concern over global climate change and its impact on every segment of society.

### March 31

The Leopold Center Marketing and Food Systems Initiative and the Center-led Regional Food Systems Working Group will host a day-long workshop at Gateway Hotel and Conference Center in Ames. The event showcases the Center's work in local food systems and related projects funded by the initiative and the Value Chain Partnerships working groups. The event is free and open to the public, but registration is required to ensure a meal ticket. Details to come.



### Toward a Greener Iowa

Leopold Center interim director Lois Wright Morton moderated a capstone panel at the Iowa Environmental Council annual meeting in October. Panelists included (left to right) Roger Wolf, Iowa Soybean Association; ISU Professor Emeritus Erv Klaas; food writer, consultant and lawyer Susan Roberts; and Craig Cox, Environmental Working Group. All offered ways that Iowans could develop a shared vision for a sustainable landscape.